
Wnts influence the timing and efficiency of oligodendrocyte precursor cell generation in the telencephalon.

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Public Summary:

Oligodendrocyte precursor cells (OPCs) are generated from multiple progenitor domains in the telencephalon in developmental succession from ventral to dorsal. Previous studies showed that Wnt signaling inhibits the differentiation of OPCs into mature oligodendrocytes. Here we explored the hypothesis that Wnt signaling limits the generation of OPCs from neural progenitors during forebrain development. We manipulated Wnt signaling in mouse neural progenitor cultures and found that Wnt signaling influences progenitors cell autonomously to alter the production of OPCs, and that endogenous Wnt signaling in these cultures limits the efficiency of generating OPCs from neural progenitors. To examine these events in vivo, we electroporated a soluble Wnt inhibitor or a dominant-negative transcriptional regulator into embryonic mouse neocortical ventricular zone before the usual onset of OPC production and showed that decreasing Wnt signaling in cortical progenitors results in early production of OPCs. Our studies indicate that Wnt signaling influences the timing and extent of OPC production in the developing telencephalon.

Scientific Abstract:

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